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Draft

NORTH DAKOTA STATE GAME AND FISH DEPARTMENT

PITTMAN-ROBERTSON DIVISION

PROJECT 7-R

AERIAL SURVEY TOWNSHIP AREAS

H. R. Morgan, Game and Fish Commissioner

Submitted by
Wilford L. Miller
Field Biologist
March, 1953

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INTRODUCTION

In the year 1946, two townships of 36 square miles each were selected for experimental work in aerial censusing. The primary objective was to devise a technique for obtaining complete counts of upland game birds on limited areas during the winter months.

The aerial survey proved to be very satisfactory when snow conditions are right. All available cover must be well filled with snow, with very few bare spots in fields or other parts of the area. The birds tend to congregate on such bare places where it is very difficult to see them from the plane.

In 1951 a total of 40 townships were laid out as census plots in different parts of the state. In 1952 six new townships were added in the better pheasant areas in the southeastern and southwestern counties. Two townships were also relocated in order to give a more representative coverage to that region.

It is planned to census the townships in the heaviest pheasant areas each year if snow conditions are favorable. Other townships will be covered every two or three years.

PROCEDURE

The censusing is done as soon as possible after a fresh snowfall, when cover is well filled with snow, and before the wind has caused bare spots in the field.

Using a 125 horsepower Super Cub, the pilot and observer will cover one tier of section while flying in one direction, usually east and west, zigzagging back and forth to take in all patches of cover or areas that may have game birds. The observer records in the proper section of the map all species of wildlife seen, thus facilitating exact locations if necessary. Type of cover is also recorded.

RESULTS

Snow conditions for aerial survey work were very poor throughout the winter of 1952-1953. As a result only nine townships were completed. Conditions in the townships in the southeast were not entirely satisfactory so the counts in them may be low.

Results are tabulated for all years during which the work has been done. The data for the experimental townships of Roundtop and Sydney (Nos. 30-31) in Stutsman County are also given separately.

AERIAL SURVEY TOWNSHIP AREAS - March - 1953

Area No.	Township	Range	County
1	161	98	Divide
2	161	91	Burke
3	161	85	Renville
4	161	80	Bottineau
5	159	74	Bottineau
6	159	67	Towner
7	160	59	Cavalier
8	160	53	Pembina
9	155	100	Williams
10	153	91	Mountrail
11	153	86	Ward
12	154	80	McHenry
13	153	73	Pierce
14	155	65	Ramsey
15	153	61	Ramsey
16	153	54	Grand Forks
17	147	98	McKenzie
18	144	93	Dunn
19	145	86	Mercer
20	148	80	McLean
21	147	75	Sheridan
22	145	67	Foster
23	146	60	Griggs
24	146	53	Traill
25	139	105	Golden Valley
26*	138	94	Stark
27	140	88	Morton
28	137	83	Morton
29	140	76	Burleigh
30	142	66	Stutsman
31	138	64	Stutsman
32	138	52	Cass
33*	135	102	Slope
34	130	97	Adams
35	134	92	Hettinger
36	133	85	Grant
37	132	75	Emmons
38	130	67	McIntosh
39	130 & 131	62 & 63	Dickey
40	132	52	Richland
41	129 & 130	48 & 49	Richland
42	129	55	Sargent
43	129	61	Dickey
44	129	92	Adams
45	131 & 132	99 & 100	Bowman
46	134	96	Hettinger

*Changed from 1951

Specials			
Russell Area	159	80	McHenry
S.E. Sandhills	134	53	Ransom
S. E. Sandhills	135	50	Richland

AERIAL SURVEY - 1953

Township No. 26

Pheasants- - - - -345
Sharptails - - - - 23
Cottontails- - - - 6
Whitetailed deer - 4
Mule deer- - - - - 6
Golden eagle - - - 1
Magpies- - - - - - 10
Porcupines - - - - 1

Township No. 35

Pheasants- - - - -879
Sharptails - - - - 2
Huns - - - - - - - 7
Jackrabbits- - - - 1
Porcupines - - - - 2
Golden eagle - - - 1
Prairie Falcon - - 1
Rough-legged hawk- 1

Township No. 36

Pheasants- - - - - 94
Sharptails - - - - 8
Golden eagle - - - 3
Magpies- - - - - - 3

Township No. 39

Pheasants- - - - -151
Sharptails - - - - 11
Pinnates - - - - - 2
Jackrabbits* - - - 13
Cottontails- - - - 2
Red fox- - - - - - 1

Township No. 40

Pheasants- - - - - 29
Huns - - - - - - - - 0
Red fox- - - - - - 2
Horned owl - - - - 2
Jackrabbits- - - - 2
Cottontails- - - - 4

Township No. 41

Pheasants- - - - -165
Huns - - - - - - - - 4
Jackrabbits- - - - 41
Skunks - - - - - - 1
Crows- - - - - - - 4

Township No. 42

Pheasants- - - - - 56
Huns - - - - - - - - 8
Jackrabbits- - - - 19
Whitetailed deer - 10
Red fox- - - - - - 1

Township No. 43

Pheasants- - - - -502
Huns - - - - - - - - 5
Jackrabbits- - - - 1

Township No. 44

Pheasants- - - - -295
Sharptails - - - - 6
Prairie Falcons- - 2

1953 TOTAL TOWNSHIPS COMPLETED - NINE

Total pheasants	2,516
Total sharptails	50
Total pinnates	2
Total Huns	24
Total jackrabbits	77
Total cottontail rabbits	12
Total whitetailed deer	14
Total mule deer	6
Total fox	4
Total coyotes	0
Total magpies	13
Total crows	4
Total eagles	5
Total hawks	4
Total porcupines	1
Total horned owls	2

AERIAL SURVEY COMPARISON 1951 1952 1953

Area	PHEASANTS			GROUSE			HUNS			W.T. DEER			MULE DEER			FOX			C.T. RABBITS			JACKRABBITS		
	1951	1952	1953	1951	1952	1953	1951	1952	1953	1951	1952	1953	1951	1952	1953	1951	1952	1953	1951	1952	1953	1951	1952	1953
27	48	10	*	11	30		35	0		0	0		0	0		0	0		0	0		2	0	
30	0	0	*	107	25		0	0		69	69		0	0		1	1		0	0		0	0	
31	52	31	*	72	0		68	15		3	5		0	0		1	0		0	0		27	83	
34	863	1062	*	0	10		0	0		0	0		0	14		0	0		0	0		0	0	
35	179	520	879	0	6	2	8	28	7	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
36	258	189	194	23	62	8	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
38	7	0	*	0	0		11	0		0	0		0	0		0	2		0	0		0	15	
39	181	230	151	0	0	11	0	8	0	0	5	0	0	0	0	0	0	1	1	5	2	36	141	13
40	76	115	29	6	0	0	0	21	0	1	0	0	0	0	0	0	0	2	4	0	4	1	0	2
41	**	278	165		0	0		5	4		0	0		0	0		0	0		0	0		22	41
42	**	162	56		0	0		41	8		0	10		0	0		0	1		0	0		74	19
43	**	439	502		0	0		14	5		0	0		0	0		0	0		0	0		18	1
44	**	128	295		1	6		10	0		0	0		0	0		0	0		0	0		17	0

* Not taken in 1953 due to poor snow coverage.

**Not taken in 1951.

Sydney Township - No. 31

	1946	1948	1950	1951	1952	1953
Pheasants	423	147	82	52	31	Not
Pinnated Grouse	22	18	0	48	0	Taken
Sharptailed Grouse	0	23	0	21	0	
Hungarian Partridge	25	0	57	48	15	
Red Fox	0	2	1	1	0	
Coyotes	0	0	0	0	0	
Jackrabbits	4	4	0	27	83	
Cottontail Rabbits	0	0	4	0	0	
Whitetailed Deer	2	0	10	3	5	
Snowy Owls	0	0	1	2	0	

Round Top Township - No. 30

	1946	1948	1950	1951	1952	1953
Pheasants	527	7	0	0	0	Not
Pinnated Grouse	78	0	6	0	0	Taken
Sharptailed Grouse	21	54	71	107	25	
Hungarian Partridge	0	0	0	0	0	
Red Fox	0	2	0	1	1	
Coyotes	1	2	0	0	0	
Jackrabbits	0	0	1	0	0	
Cottontail Rabbits	31	0	0	0	0	
Whitetailed Deer	40	99	101	69	69	
Snowy Owls	0	0	0	0	0	

SUMMARY AND CONCLUSIONS

1. Due to lack of satisfactory snow coverage only nine townships were censused during the winter of 1952-1953. The winter was one of the mildest in many years, with very little precipitation. The light snowfalls that did occur at intervals soon melted.

2. The townships numbered as areas 39, 40, 41, 42, and 43 are located in the southeastern part of North Dakota. Snow conditions were unfavorable in most of those areas and perhaps the survey should not have been taken; but since this appeared to be the only opportunity for a count the areas having the better pheasant populations were taken.

In comparing population figures for 1952 and 1953 in this region, some allowance must be made for differences in snow coverage. In one of the five areas there was an increase from 439 to 502 pheasants. In the remaining four there was a decrease of 49 percent -- from a total of 785 birds in 1952 to 401 in 1953.

3. Snow conditions in areas numbered 26, 35, 36, and 44, located in southwestern North Dakota were good for aerial censusing. In all of these areas the pheasant population showed an increase -- the total increase being 46 percent from 1952 to 1953. On the four townships the total numbers of pheasants were 1,176 in 1952 and 1,713 in 1953.

4. After several years of experimental aerial censusing, it must be concluded that the technique is good for pheasants but unreliable for other upland game species. The sharptailed and pinnated grouse shift their wintering grounds to areas having desirable food and cover. The presence of a corn field, for example, will change the wintering grounds of a flock of grouse.

5. The aerial survey, as used primarily for pheasants, covers all cover patches in a township but not necessarily every square mile of the area. As a result, a comparison of population of fox, coyote, and rabbits may not be accurate. This is especially true of the "jackrabbit" population. In the winter of 1952 there was a long period of heavy snows and drifting which forced most of the rabbits into shelterbelts and farm woodlots. In 1953 there was only a short period during which the ground was covered with snow and consequently the animals did not concentrate. It can be seen that comparisons from year to year would be dependent upon weather conditions, in spite of the fact that a complete snow coverage is required for all aerial counts. Pheasants tend to concentrate in good cover during the winter months and can readily be seen when they are in the fields away from the cover patches.

The year 1953 was unusual because of the absence of severe winter weather. Normally, the aerial surveys will give fairly accurate trends of rabbits and some other species.

6. An analysis of the winter pheasant concentrations reveals that the presence or absence of cattle feed lots is important in determining the winter concentration points. A woodlot providing relatively poor winter cover, but having a feed lot, will usually have many more birds than nearby trees that would furnish good cover but little or no winter food.

In the northern part of the state where there is little outside feeding of livestock and where cornfields are few, the food problem may be more important than cover during winter months. At the time when this part of the state supported a fairly high pheasant population, the numerous straw stacks on every farm furnished much of the winter feed. Now the practice of combining nearly all grain crops has removed this source of food. Also the high stubble left by combines fills with snow and makes it more difficult for the birds to obtain the waste grain on the ground.